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AMENDMENTS TO THE CLAIMS

1. (Original) A method for detecting damage to a structure comprising a plurality of support members disposed between a first wall and a second wall comprising:

providing a scanning device comprising an ultrasonic transducer and a detector for detecting ultrasonic energy;

locating a first support member behind the first wall;

placing the scanning device adjacent the first wall in alignment with the first support;

moving the scanning device over the first wall while directing ultrasonic energy toward the first support member and detecting reflected ultrasonic energy;

analyzing the reflected ultrasonic energy to determine the relative density of the first support member in relation to a known density; and

recording the position of the scanning device when the reflected ultrasonic energy indicates a density different from the known density.

2. (Original) The method of claim 1 further including calibrating the scanning device against a reference to determine the known density.

3. (Original) The method of claim 1 further including generating a representation of the first support member and an indication of the relative density of the first support member at each of a plurality of locations on the first support member.

4. (Original) The method of claim 1 wherein said recording the position of the scanning device comprises providing a position locating system for determining the position of a marker and associating a marker with the scanning device.

5. (Original) The method of claim 1 further including detecting the presence of fasteners in the first support member.

6. (Original) The method of claim 3 further including detecting the presence of fasteners in the first support member and generating a representation of the fasteners on the generated representation of the first support member.

7. (Original) The method of claim 1 wherein said generating a representation of the first support member comprises the steps of providing a two-dimensional representation of the structure and providing a program for generating a three-dimensional representation of the structure based on the two-dimensional representation of the structure.

8. (Original) The method of claim 1 further including wirelessly transmitting a signal indicative of the reflected ultrasonic energy to a computer having a processor.

9. (Original) The method of claim 4 wherein said marker comprises an ultra wideband transmitter and wherein said providing a position locating system comprises providing a plurality of ultra wideband receivers, connecting the ultra wideband receivers to a processor and calculating the time of arrival of a signal from said ultra wideband transmitter at a subset of said plurality of ultra wideband receivers.

10. (Original) A method for mapping a condition of a structure including a plurality of support members covered by at least one wall comprising:

storing a representation of a structure in a computer;

detecting support member density at a plurality of sites on a plurality of support members;

identifying the location of each of the plurality of sites;

mapping the plurality of sites onto the representation of the structure; and

indicating on the representation of the structure the support member density at each of the sites.

11. (Original) The method of claim 10 wherein said measuring support member density at a plurality of sites on a plurality of support members comprises providing an ultrasonic transducer and transmitting an ultrasonic pulse through the at least one wall and each of the plurality of sites on each of the plurality of members and detecting reflection of the ultrasonic pulse.

12. (Original) The method of claim 11 wherein said identifying the location of each of the sites comprises providing a position locating system for determining the position of a marker in a frame of reference, associating a marker with the ultrasonic transducer, and recording the position of the marker in the frame of reference when the ultrasonic transducer is located at each of the plurality of sites.

13. (Original) The method of claim 12 wherein said indicating on the representation of the structure the support member density at each of the sites comprises displaying one of a plurality of colors associated with a plurality of predetermined density ranges at a location on the representation corresponding to one of the plurality of sites.

14. (Original) A system for mapping a condition of a structure comprising a plurality of support members covered by a wall comprising:

a computer processor having a memory;

a position locating system for determining the position of a marker in a frame of reference and communicating said position to said computer processor;

a density sensor in communication with said computer processor; and

a marker associated with said density sensor.

15. (Original) The system of claim 14 wherein said position locating system comprises a plurality of receivers located at known positions within said frame of reference.

16. (Original) The system of claim 15 wherein said receivers comprise ultra wideband receivers.

17. (Original) The system of claim 16 wherein said marker comprises a transmitter.

18. (Original) The system of claim 17 wherein said marker comprises an ultra wideband transmitter.

19. (Original) The system of claim 17 wherein said density sensor comprises an ultrasonic transducer.

20. (Original) The system of claim 14 wherein said position locating system further includes a reference transmitter.

21. (Original) The system of claim 14 further including a two-dimensional representation of the structure stored in said memory.

22. (Original) The system of claim 21 including a three-dimensional model generator operatively associated with said computer.

23. (Currently Amended) A system for mapping a condition of a structure comprising a plurality of support members comprising:

a computer processor ~~having a memory~~;

a two-dimensional model of the structure operatively associated with said computer processor ~~stored in said memory~~;

a three-dimensional model generator operatively associated with said computer processor;

a position locating system for determining the position of a marker in a frame of reference and communicating said position to said computer processor, said position locating system comprising a plurality of ultra wideband receivers;

a density sensor comprising an ultrasonic transducer in communication with said computer processor; and

an ultra wideband transmitter associated with said density sensor.

24. (Original) A system for mapping a condition of a structure comprising a plurality of support members covered by a wall comprising:

processor means;

position locating means for determining the position of a marker in a frame of reference and communicating said position to said processor means;

density sensing means operatively connected to said processor means; and

a marker associated with said density sensing means.

25. (Original) The system of claim 24 wherein said position locating means comprises a plurality of receiver means.

26. (Original) The system of claim 25 wherein said density sensing means comprises an ultrasonic transducer.

27. (Original) The system of claim 26 wherein said marker comprises an ultra wideband transmitter.

28. (Original) A method for detecting damage to one of a first wall and a second wall facing one another and enclosing a plurality of support members:

providing a scanning device comprising an ultrasonic transducer and a detector for detecting ultrasonic energy;

locating a first support member behind the first wall;

placing the scanning device adjacent the first wall laterally displaced from the first support;

moving the scanning device over the first wall while directing ultrasonic energy toward the second wall and detecting reflected ultrasonic energy;

analyzing the reflected ultrasonic energy to determine the relative density of the second wall in relation to a known density; and

recording the position of the scanning device when the reflected ultrasonic energy indicates a density different from the known density.

29. (Original) A method according to claim 28, further comprising locating a second support member behind the first wall, wherein the placing the scanning device adjacent the first wall laterally displaced from the first support places the scanning device at a position aligned between said first support member and said second support member.

30. (Original) The method of claim 28 wherein said recording the position of the scanning device comprises providing a position locating system for determining the position of a marker and associating a marker with the scanning device.

31. (Original) The method of claim 30 wherein said marker comprises an ultra wideband transmitter and wherein said providing a position locating system comprises providing a plurality of ultra wideband receivers, connecting the ultra wideband receivers to a processor and calculating the time of arrival of a signal from said ultra wideband transmitter at a subset of said plurality of ultra wideband receivers.

32. (Original) The method of claim 29 wherein said recording the position of the scanning device comprises providing a position locating system for determining the position of a marker and associating a marker with the scanning device.

33. (Original) The method of claim 32 wherein said marker comprises an ultra wideband transmitter and wherein said providing a position locating system comprises providing a plurality of ultra wideband receivers, connecting the ultra wideband receivers to a processor and calculating the time of arrival of a signal from said ultra wideband transmitter at a subset of said plurality of ultra wideband receivers.

34. (New) The system of claim 14, wherein position locating system is a global positioning system.

35. (New) The system of claim 23, wherein the position locating system is a global positioning system.

36. (New) The system of claim 24, position locating means is a global positioning system.